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ABSTRACT

A study was conducted to examine the application of quality standards developed by the International Standards Organization (ISO) to colleges in England and Wales. The British Standards Institution (BSI) has applied these standards to service industries, thus providing a framework for case studies in colleges. Six colleges in England and Wales analyzed their curriculum, management, and marketing and then prepared 3-year development plans that were consistent with the international standards. The following conclusions were reached about the application of quality standards to colleges: (1) quality standards are most appropriate to those learning situations where "fitness for purpose" is the goal, including vocational and professional study; and (2) it is critical to measure the process in terms of the purpose of the instruction, for which a computer system using competency-based objectives is required. Contains 10 references. (Author/KM)

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International Quality Standards in Colleges

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This paper was presented at the Twenty-Ninth Annual Forum of the Association for Institutional Research held at the Omni Inner Harbor Hotel and the Lord Baltimore Hotel, Baltimore, Maryland, April 30 - May 3, 1989. This paper was reviewed by the AIR Forum Publications Committee and was judged to be of high quality and of interest to others concerned with the research of higher education. It has therefore been selected to be included in the ERIC Collection of Forum Papers.

Teresa Karolewski
Chair and Editor
Forum Publications Editorial
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International Quality Standards in Colleges

Abstract

The purpose of this study was to apply quality standards developed by the International Standards Organization (ISO) to Colleges in England and Wales. The British Standards Institution (BSI) has applied these standards to service industries and, thus, has provided a framework for case studies in Colleges. Six Colleges in England and Wales analyzed their curriculum, management, and marketing and then prepared three-year development plans which were consistent with the international standards. This paper was written for institutional researchers who find difficulty in defining quality in a measurable way when asked to include quality as a planning parameter.

Introduction and Perspective

In December of 1988, the Secretary of State for Employment presented a White Paper dealing with employment in the 1990's (Department of Employment, 1988). The Secretary listed two key developments which underline the importance of developing Britain's human resources. The first was the move toward completing the Single European Market in 1992 and the second was the emergence of powerful new economies in South East Asia and elsewhere. A major problem facing Britain, and the rest of the world as well, is the inflexible arrangements at national and industry levels which prevent training at the local level to meet the needs of people who wish to be trained for new or changing jobs. According to this White Paper, industries grow more international every year while the supply of locally trained human resources, qualified to work in international markets, continues to diminish.

The perspective of this paper is that of managers of colleges which are required to supply locally trained people to the international market and to assure the quality of the training program. In this sense, the customers for the training are, in addition to the students, the international labor markets which have requirements for people trained to meet international quality standards. Institutional researchers need to understand both the international context of this requirement and the measurement of quality within that context if they are to help to solve this most complex problem in the decade ahead.

Purpose

The purpose of the research reported in this paper was to apply international quality standards developed by the British Standards Institution to six colleges in England and Wales.

Related Literature

The basic literature for this study established both the international context and the requirements for training in the United Kingdom. This literature was written by two different segments of the British government. The first segment was industrial and included a combination of private British industry, the Department of Trade and Industry, and the British Standards Institution (BSI) which is incorporated by Royal Charter. BSI is the independent national body for the preparation of British standards and is the United Kingdom member of the International Standards Organization (ISO). The second was an educational segment which combined The Audit Commission for local authorities in England and Wales, The Department of Education and Science (DES), and the Manpower Services Commission (subsequently the Training Commission and now the Training Agency or TA).

The Industrial Segment

The first document to establish the international standards for quality control and quality assurance was prepared for the Inspection and Quality Assurance Panel of the Confederation of British Industry and was circulated for comment in 1971. The document was a guide to quality control procedures based on NATO and on Defence Standards (BSI 4891) and was prepared by the British Standards Institution (British Standards Institute [BSI], 1971). It was an early

attempt to provide British industry with a concise balanced document giving sufficient guidance on the fundamental issues involved with quality without over-emphasizing particular aspects in too much detail. In that same year BSI published its first edition (BSI 4778) of terminology standards (British Standards Institution [BSI], 1971). Because it was generally acknowledged that the principles of quality assurance crossed all industrial boundaries and professional disciplines, in a manner similar to fiscal control, there was often resistance to their general application. This may have been the result of ignorance or a wish to maintain an established departmental demarcation. Much time and effort was being wasted both within and between industry, commerce, government and professional academic institutions when ambiguities arose as a result of the inability to differentiate between such terms as "grade" and "quality level"; "precision" and "accuracy"; and similar terms which formed an interface between various sectors of society. One major contribution of the BSI effort was the definition of quality as "fitness for purpose" and not as excellence. In effect this shifted measurements away from subjective conjecture based on different definitions and required clearly stated objectives which used common standards to measure performance.

The final contribution made by BSI when their document became the international model for quality now known as the International Standards Organization (ISO 9000-1987) series on quality control(British Standards Institution [BSI], 1987). It established an international context for quality and today almost all developed nations have a quality standard which is identical with the ISO standard.

Today BSI is recognized as the world leader in registering companies to this international standard. Multi-national corporations within the United States are now working with the U.S. counterpart of BSI, The American National Standards Institute, to establish procedures to register their American divisions to the ISO standrard. The effect of this registration process upon quality control within British industry has been dramatic. In 1979, when the present Conservative government came into power, there were over 17,000 inspectors for quality control. Today there are less than 1000. This was accomplished, in part, by going from a cost-plus system with inspection of the finished product to a fixed cost system which concentrated on the design prior to expending funds. During this same period colleges of further education in England and Wales were undergoing external review, but with predictably less dramatic results.

The Educational Segment

Since 1980 the Audit Commission for local authorities in England and Wales has been charged with "securing economy, efficiency and effectiveness" in local authorities in much the same way as British industry had been required to do by the Government. Given the Government's intention to reduce and restrict public expenditure for education, any increase in efficiency was seen as having the capacity for off-setting the more debilitating effects of expenditure cuts.

Early on in the process, further education, with net expenditure of about one and one-half billion dollars, was identified as a prime target for investigation. During 1984 audits of 165 colleges were undertaken. The findings from this exercise were summarized in the Audit Commission Report, Obtaining Better Value from Further Education (Audit Commission, 1985). The Commission

claimed to have identified "value improvement opportunities worth over 85 million dollars per year (or) over $500,000 per college".

The Audit Commission's report had a number of deficiencies and was the subject of highly critical reviews (Birch & Latcham, 1985). Nevertheless, it demanded a response from the Department of Education and Science and the local authority associations of England and Wales. This response took the form of a "joint" study of efficiency (known as JES) in further education. The report (Department of Education and Science [JES], 1987) of this study group Managing Colleges Efficiently was published and a direct line may be traced from this report study through a consultative document Maintained Further Education: Financing, Governance and Law (Department of Education and Science [DES], 1987) to the Education Reform Act: Part II Higher and Further Education (Department of Education and Science [DES], 1988).. The Act was expected to bring about a significant extension of the financial and managerial autonomy of colleges. In return, colleges were expected to plan and control their resources more rigorously than they had the past.

Despite the title of its report "Managing Colleges Efficiently", the joint study was concerned with both effectiveness and efficiency. The group considered that a college is effective to the extent that it produced outcomes which were relevant to the needs and demands of its clients, which was consistent with the BSI definition of quality. A college was said to be more efficient to the extent that it maintained its outcomes with fewer resources, or increased these outcomes with a less than proportionate increase in inputs. The group also believed that there was little point in examining the efficiency of an operation which was

ineffective. So the first thing to be assessed was effectiveness, and effectiveness had to be monitored at the course level of aggregation through performance indicators.

Thus these two segments of the government reached the same conclusions about how to train people who would be able to meet the international quality standards accepted within the Single European Market scheduled to begin in 1992. First there was a focus upon the needs and the demands of clients who required products, services, and trained personnel which met ISO quality standards. Secondly there was similar emphasis upon design prior to the expenditure rather than inspection of the end product. Finally, both segments came to a concept of value for money which took quality into consideration. This defined "value" as Value=Quality/Cost and required a balance of cost and quality in order to meet the goal of value for money.

Approach and Methods

The review of related literature identified three major aspects of an application of international quality standards to colleges of further education in England and Wales. In the research reported in this paper, the first aspect, focus upon client needs, was accomplished by a survey of employers in the local area of each of six colleges. The second aspect, emphasis on design rather than inspection, was accomplished by a survey of present inspection agencies and of some conceptual models for design of training based on clear specification of the quality training requirement. Finally, the value for money aspect was accomplished as each college considered both efficiency and effectiveness and evaluated its readiness to add quality to its projections.

Survey of Local Employers

The sample was drawn from the service area of six further education colleges in England and Wales. Five of the colleges selected ten employers and one college selected eight employers. In each case the sample included employers who had little or no contract with the college as well as employers who worked closely with the college. All fifty-eight employers were interviewed by one of three member project team. The total of fifty-eight companies employed about 65,000 workers and ranged from one employee to 14,000 employees.

The interviews followed a structured format. The first set of questions was directed toward the general attitude of the person being interviewed and responses were coded as optimistic, hopeful, doubtful, or pessimistic. The intent of the question was to see if the views on training were a part of a general view or if the views or training were unique. A second set of questions dealt with the aim of the training program, the training policy which guided the program, and the extent of the training program. This second set of questions provided a measure of the commitment to training by the employer and formed the dependent variable of this study. The level of commitment was coded as enthusiastic/aggressive, positive/active, reserved/passive and negative/preventative. The intent of these questions was to characterize the commitment so that the independent variable could be related to that commitment. A final set of questions had to do with the satisfaction the employers felt toward the control they were able to exercise over their training programs. These levels of satisfaction were coded as satisfied with the control, desired more control, desired less control and had no interest in control. The purpose

of this set of questions was to elicit any comments about the training program in general and further education in particular as viewed from the employer's perspective.

The interviews were conducted in the company offices with the individual designated by the company as having responsibility for training. In most cases this was an individual who had a portion of time assigned to the responsibility for training. In several cases the training directors were full-time and in a few instances, particularly in small companies, the chief executive of the company was responsible for training. This clearly limited the results and represents only the view of one person within each company regarding the corporate view of training. Nevertheless, the interviews were conducted with those individuals who had the most experience with training and who could best express the company training policy.

Finally, it should be noted that the personal interview method was a relatively expensive way to collect data. A conservative cost estimate for the fifty-eight interviews was $130 each. The advantages over a less costly mail questionnaire method were (1) the ability to adapt the interview to the situation found at each company, (2) a 100% return rate and (3) the ability to probe any unexpected responses in greater depth. Conducting the survey was time-consuming, expensive and at the same time indispensable to understanding employer concerns for and commitment to quality training.

The results of this project have been reported elsewhere,(Johnson & Birch, in press) but in general these results established that the larger companies, had a more positive attitude toward training and were more committed to training both

within their own establishments and in colleges of further education. Quality assurance emerged as the behavioral aspects of the system while quality control was viewed as more measurable. There were "cost centers" associated with quality assurance . The first and potentially the largest was the cost of not doing it right be first time every time, currently being called "defects in process". In education this cost is unlikely to be reduced to zero although "zero defect" is the conceptual goal of quality control . An estimate of this cost may be computed by comparing the cost per student enrolled with the cost per successful student in any one year of a course. Some of the employers in this study seem to expect a "zero defect" standard rather than the traditional standard which accepts a "failure rate" as tolerable or even desirable (in terms of demonstrating a concern with "standards"). This expectation is consistent with international quality standards as was seen as a challenge by the colleges in this study.

The Design of Instruction

The design of instruction within a quality control system required a standard definition and a set of criteria. The term "quality" could not be used to express a degree of excellence or excellence in a comparative sense, nor could it be used in a quantitative sense for technical evaluation. Rather the term was used in the "fitness for purpose" sense consistent with the ISO 9000 series on quality control. "Quality control" involves all these techniques and activities aimed both at monitoring a process and at eliminating causes of unsatisfactory performance at all the relevant stages from the identification of needs through to the assessment of whether these needs have been met. As such "quality

control" is a subset of "quality assurance" which is defined by the BSI as "all those planned and systematic actions necessary to provide adequate confidence that a product or service will satisfy given requirements for quality". Thus all activities and all functions in any undertaking and all personnel engaged in them are concerned with the attainment of quality and are inherently involved in quality assurance.

For a complete statement about quality two sets of measures are required: "qualitative" and "qualitative". The quantitative measures include the "effectiveness" indicators recommended by the Joint Efficiency Study. They also include the pre-course/selection tests, phase tests and summative tests. Ideally these instruments should reveal whether "needs" are identified in the specification are being met. In some cases the instruments will have been constructed by external examining boards. The qualitative measures include value and attitude surveys intended to assess levels of satisfaction with the process by students and employers. Measurements may be taken at entry, during the course, at exit and post course. Where available, the comments and recommendations of external examiners and moderators and Her Majesties Inspectorate would also need to be taken into account. These measurements and evaluations need to be fed into a regular and systematic course monitoring and review process.

A control system involves:

* identifying the key variables to be monitored;
* setting a "target" or "standard" or "satisfactory" level of performance for these variables;

* developing and implementing a system for collecting analyzing and reporting on the key variables; and
* having a clear view of what action should follow if the performance falls below the "target" or "standard" or "satisfactory" level.

Thus control facilitates "management by exception" i.e. it focuses attention on those outcomes which are "not OK" when compared with the original expectations. In so doing it stimulates remedial action - but after the event. Ideally a control system should alert the organization to the need for change before, rather than after, the event since "prevention is better than a cure". In other words the ideal control system would be a "feed forward" rather than a "feedback" system. This may be possible in some cases.

For example, consider a college which wishes to minimize its "withdrawal" rates. The calculation of the rates at the end of the year will enable the college to compare its performance with others and so identify the size and the incidence of the problems - if any. This may well prompt more investment in student selection, initial guidance and subsequent counselling next year. It may also help the college to channel its staff development where it is most needed. The ideal control system, however, would have identified potential problems and would have set in train the changes required to minimize the impact of student dissatisfaction before the students voted with their feet. For example, the regular (weekly) monitoring of attendance and of the submission of assignments might well have prompted further investigation of student opinions and, hence, timely remedial action.

In a college dedicated to improving quality the first appraisal of the aims, feasibility and resource base of a new or revised course should take place before it is launched. This process is usually called "validation" to distinguish it from subsequent course monitoring and course evaluation. It is an example of "feed forward" control. This process should:

* include an analysis of the market to prove need and demand;
* demonstrate how these needs and demand will be met;
* ensure that the proposals satisfy relevant educational/ training criteria;
* specify the resource and organizational implications; and
* identify the criteria of success.

Three national examining and validation bodies were selected for investigation in this study. The largest, The City and Guilds of London, technical and vocational testing and certification body adopted a policy of competency-based certification in 1977 but makes no specific study of student progression through employment or continuing education other than through its contacts in industry. The main body for office skills and other commercial subjects is The Royal Society for Arts. They publish very detailed syllabi, with equally detailed notes for teachers on precisely what skills and tasks students should be expected to demonstrate at the end of the course. Employers are well represented within committees of the examining boards to assure that programes are closely linked with current practice. The third body, The Business and Technical Education Council, is concerned with validation rather than with

certificates and see the student and the employer as their basic customers. They seek to assure employers that students have learned the knowledge and are able to apply it.

Taken together, these major national examining and validating bodies undertake significant roles in quality control and quality assurance. They design specifications, closely control testing, monitor teaching strategies, and involve employers to assure fitness for purpose.

The effect of these external bodies on the six colleges selected for this study and the emphasis in the design of instruction was explored to determine the state of the art of quality control and quality assurances for each college. A quality audit was conducted in each college against the following three criteria: (1) a specification of instruction which identified the performance criteria, (2) instruments for collecting data on both the quantitative and the qualitative dimensions of the college, and (3) a system of feedback and review by all who were involved the teaching, learning, and administrative processes. Interviews were held in each of the six colleges, current data bases were examined, and course review processes were evaluated. As a result, the following picture emerged.

All the colleges are now systematically collecting data on "enrollments"., "completions" and "successes". This enables the computation of the retention and success rates required by the Joint Efficiency Study (JES). Only two of the colleges claimed to have this data readily available going back three years. In only one of the colleges is the data being currently maintained centrally: in the remainder it is variously located but primarily at the department level.

Data on target enrollments is available in only half of the colleges and data on "destinations" is even more rare. Consequently it is not possible at the moment to compute the ratios enrollments/target enrollments, and "progressions" and "completions" in all cases.

Three of the colleges have acquired, and are now using, hardware and software capable of maintaining a continuous record of individual student's achievements and progress, and of generating all the effectiveness, measures required by the JES. The remaining colleges are planning to acquire and to implement such a computerized record system.

Two of the colleges are now engaged in formal target setting with their LEAs. A further college is implementing formal internal agreements and the rest claim to have informal internal arrangements.

Two of the colleges are regularly and systematically canvassing student opinions and employer feedback on their provision. Some course tutors and course teams undertake these surveys in the other colleges but the practice is not widespread nor is it regular.

The arrangements made for reviewing course performance vary. In one case the process and the procedures are well documented, the information to be collected and considered is defined, and the review team includes evaluators drawn from outside the course team. In many cases, however, the process seems to be prompted by the Head of Department and/or course tutor who decides if, when how and who should be involved. These comments of course do not apply to whatever arrangements for evaluation and review are made within the colleges to satisfy the requirements of the national examining and validating bodies.

From the brief account above it is clear that there is considerable scope for improving the management of quality. The first priority must be for all the colleges to work toward a full implementation of the Joint Efficiency Study. This requires all colleges to operate comprehensive, integrated, computerized management systems able to cater for the performance indicators identified in the report;

negotiate externally with their LEAs and internally to set targets for all the performance indicators;

undertake a systematic annual review of performance; and

survey student and employer opinion on a regular basis.

Assuring Value for Money

The concept Value=Quality/Cost required a clear set of terms which would be consistent with the ISO 9004 standards. The literature review conducted for this study and the application to the six colleges in England and Wales provided a means for defining quality within this concept.

Value for money was an intractable concept when it was used as a synonym for economy or simply as another name for reduced costs. Quality needed to be included in a form that could be subjected to control in the same way a control system is used for costs. To accomplish this, quality control was based on the "fitness for purpose" concept which required a feedback system for both the process of curriculum design and from the customers which in this study were the students and the employers.

In order to be able to create a feedback system, each college in this study recognized the need for a computerized competency-based instructional system in

order to monitor the indicators recommended in the report of the Joint Efficiency Study. The basic unit to be evaluated was the course, but the assessment of the impact of the instruction provided had to be the performance of each individual student within each course. Thus a critical element of the system, the specification, allowed for a design which included the requirements of the customer and the capacity of the training institution to provide people with needed skills at the local level.

Finally, the value for money concept required each of the six colleges to be able to measure the process at various stages so that quality can be built into the design and assured in the final product. Measurements of quality are possible at entry, during the course, at exit and post course. The objective of quality control/assurance is to bridge the gaps between the characteristics of the students at entry and the characteristics which are required at exit.

Entry requirements for employment or for admission into higher education are the exit requirements certainly for full-time courses and are critical elements in a quality control system. The most important question in quality control/assurance is "Do you know the "true" requirements of the customer?". A "specification" of these requirements for a course prompts the curriculum processes. The more detailed and exact the specification, to more likely it will be that students meet the end requirements.

Arguably the specification of the exit behavior should rest with employers and with higher education. Certainly the consequences of bad decisions to accept or reject applicants lie outside the college. However, the future of further education and the funding for it depends in no small way upon satisfying the

decision makers in industry and higher education, and colleges cannot afford to abdicate from the responsibility for establishing the clearest specification of end requirements. In this, as is noted elsewhere in this report, they are assisted by HMI and by the national examining and validating boards.

As defined by the BSI the "specification" is a document that prescribes the requirements with which the product or service has to conform. It should also indicate the means and the criteria whereby conformity can be checked. The specification is central to a system of quality control and quality assurance.

Conclusions

The results obtained from a study of national documents, international standards and from the experience of working with six colleges in England and Wales led to the following conclusions about the application of quality standards to colleges.

Quality standards can be most appropriately to those learning situations where "fitness for purpose" is the goal. This would include the vocationally oriented colleges selected for this study as well as any professional programs or schools in higher education.

It is critical to be able to measure the process in terms of the purpose of the instruction. The close observation which is required will need a computer system which is driven be competency-based objectives. The software for such systems is available. The institutional commitment to the quality management system is much more difficult to acquire.

International standards for quality have particular interest as European countries plan for a single market by 1992. A labor force which has been trained

in a quality training institution should be able to cross national boundaries and to compete effectively in international markets.

Institutional researchers in all nations could profit from reading the international quality standards and from proper application within their institutions.

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